

SOV/78-4-1-7/48

III. The Energetics of Solid Uranium Oxyhalides in the Light of the Substitution Principle

those of the solid chlorides and especially of the bromides (with the exception of  $UCl_2$ ). With regard to energetics and the exchange principle the situation of the oxychlorides has to be regarded as intermediary between halides and oxides. The comparative proximity of the curves of the chlorides and oxides as compared to the curves of the bromides and oxides can be explained by the fact that oxygen and chlorine have about the same oxidation properties. The formation enthalpies of solid oxyhalides are higher than those of the solid oxides and therefore the oxyhalides have more energy. The exchange energetics are determined by simple regularities with regard to the theory of chemical compounds. The greater condensation energy of oxychlorides shows that these compounds are more stable than oxides and that they show less dismutation trend. There are 2 figures, 1 table, and 8 references, 5 of which are Soviet.

SUBMITTED: August 6, 1957

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5(A), 21(1)

SO7/78-4-1-8/48

AUTHORS:

Shchukarev, S. A., Vasil'kova, I. V., Drozdova, V. M.,  
Frantseva, K. Ye.

TITLE:

The Determination of the Formation Heat of  $\text{UO}_2\text{Cl}_{2\text{aq}}$ ,  $\text{UO}_2\text{Br}_{2\text{aq}}$ ,  
 $\text{UO}_2\text{Cl}_2 \cdot \text{H}_2\text{O}$ ,  $\text{UO}_2\text{Cl}_2 \cdot 3\text{H}_2\text{O}$ ,  $\text{UO}_2\text{Br}_2 \cdot \text{H}_2\text{O}$  and  $\text{UO}_2\text{Br}_2 \cdot 3\text{H}_2\text{O}$   
(Opredeleniye teplot obrazovaniya  $\text{UO}_2\text{Cl}_{2\text{aq}}$ ,  $\text{UO}_2\text{Br}_{2\text{aq}}$ ,  
 $\text{UO}_2\text{Cl}_2 \cdot \text{H}_2\text{O}$ ,  $\text{UO}_2\text{Cl}_2 \cdot 3\text{H}_2\text{O}$ ,  $\text{UO}_2\text{Br}_2 \cdot \text{H}_2\text{O}$  i  $\text{UO}_2\text{Br}_2 \cdot 3\text{H}_2\text{O}$ )

PERIODICAL:

Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 1, pp 39-41  
(USSR)

ABSTRACT:

The crystal hydrates of uranyl chloride and uranyl bromide  
were produced from anhydrous  $\text{UO}_2\text{Cl}_2$  and  $\text{UO}_2\text{Br}_2$  by treatment  
with inert gas containing steam at room temperature. The  
synthesized compounds were analyzed by the determination of  
uranium according to the Vanadate method. The chlorine and  
bromine content was determined. The determination of the  
solution heat of anhydrous uranyl chloride and uranyl bromide  
and their monohydrates and trihydrates in water at infinite  
dilution was carried out at 25°. The results are shown in

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SOV/78-4-1-8/48

The Determination of the Formation Heat of  $\text{UO}_2\text{Cl}_{2\text{aq}}$ ,  $\text{UO}_2\text{Br}_{2\text{aq}}$ ,  $\text{UO}_2\text{Cl}_2 \cdot \text{H}_2\text{O}$ ,  $\text{UO}_2\text{Cl}_2 \cdot 3\text{H}_2\text{O}$ ,  $\text{UO}_2\text{Br}_2 \cdot \text{H}_2\text{O}$  and  $\text{UO}_2\text{Br}_2 \cdot 3\text{H}_2\text{O}$

table 2. The following values were given:

$$\Delta H \text{UO}_2\text{Cl}_2 = -23.86 \pm 0.13 \text{ kcal/mol}$$

$$\Delta H \text{UO}_2\text{Cl}_2 \cdot \text{H}_2\text{O} = -13.32 \pm 0.23 \text{ kcal/mol}$$

$$\Delta H \text{UO}_2\text{Cl}_2 \cdot 3\text{H}_2\text{O} = -10.00 \pm 0.11 \text{ kcal/mol}$$

$$\Delta H \text{UO}_2\text{Br}_2 = -33.28 \pm 0.32 \text{ kcal/mol}$$

$$\Delta H \text{UO}_2\text{Br}_2 \cdot \text{H}_2\text{O} = -24.42 \pm 0.08 \text{ kcal/mol}$$

$$\Delta H \text{UO}_2\text{Br}_2 \cdot 3\text{H}_2\text{O} = -21.51 \pm 0.12 \text{ kcal/mol}$$

On account of the values of the solution heat the formation heat of  $\text{UO}_2\text{Cl}_{2\text{aq}}$ ,  $\text{UO}_2\text{Br}_{2\text{aq}}$ ,  $\text{UO}_2\text{Cl}_2 \cdot \text{H}_2\text{O}$ ,  $\text{UO}_2\text{Cl}_2 \cdot 3\text{H}_2\text{O}$ ,  $\text{UO}_2\text{Br}_2 \cdot \text{H}_2\text{O}$ , and  $\text{UO}_2\text{Br}_2 \cdot 3\text{H}_2\text{O}$  was calculated and summed up in

table 3. The values of the formation heat of  $\text{UO}_2\text{Cl}_{2\text{solid}}$  and  $\text{UO}_2\text{Br}_{2\text{solid}}$  are as follows:

$$\Delta H_{\text{formation}}(298^\circ\text{K}) \text{UO}_2\text{Cl}_{2\text{solid}} = -301.9 \text{ kcal/mol}$$

$$\Delta H_{\text{formation}}(298^\circ\text{K}) \text{UO}_2\text{Br}_{2\text{solid}} = -281.6 \text{ kcal/mol.}$$

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The Determination of the Formation Heat of  $\text{UO}_2\text{Cl}_{2\text{aqu}}$ ,  $\text{UO}_2\text{Br}_{2\text{aqu}}$ ,  $\text{UO}_2\text{Cl}_2 \cdot \text{H}_2\text{O}$ ,  
 $\text{UO}_2\text{Cl}_2 \cdot 3\text{H}_2\text{O}$ ,  $\text{UO}_2\text{Br}_2 \cdot \text{H}_2\text{O}$  and  $\text{UO}_2\text{Br}_2 \cdot 3\text{H}_2\text{O}$

The dehydration heat of  $\text{UO}_2\text{Cl}_2 \cdot 3\text{H}_2\text{O}$  was calculated according  
to the following equation:  $\text{UO}_2\text{Cl}_2 \cdot 3\text{H}_2\text{O} = \text{UO}_2\text{Cl}_2 \cdot \text{H}_2\text{O} + 2\text{H}_2\text{O}_{\text{gas}}$ .

This value is in accordance with the value obtained by the  
tensimetric method (Ref 4). There are 3 tables and 6 references,  
4 of which are Soviet.

SUBMITTED: September 5, 1958

Card 3/3

S/054/60/000/02/14/021  
B022/B007

AUTHORS: Shukarev, S. A., Vasil'kova, I. V., Sharupin, B. N.  
TITLE: The Investigation of the Halides of Molybdenum. IV. The  
Determination of the Formation Enthalpy of Molybdenum Di-  
and Trichloride  
PERIODICAL: Vestnik Leningradskogo universiteta. Seriya fiziki i khimii,  
1960, No. 2, pp. 112-120

TEXT: The present article comprises part of the material used in the  
dissertation of B. N. Sharupin. It was found that in the oxydation of  
molybdenum di- and trioxide in oxygen a mixture of molybdenum trioxide and  
molybdenum dioxide is obtained. Table 1 gives the results obtained by  
analysis of the molybdenum- and chlorine content in  $\text{MoCl}_3$  and  $\text{MoCl}_2$ ,  
which are compared with the data calculated according to theory. The  
calorimeter used for the determination of combustion enthalpy was  
calibrated with metallic magnesium, which was obtained in spectroscopically  
pure state from the Vsesoyuznyy alyuminiyevo-magniyevyy institut (All-Union  
Aluminum-Magnesium Institute). The results of calibration are given in

✓ B

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The Investigation of the Halides of Molybdenum. S/054/60/000/02/14/021  
 IV. The Determination of the Formation Enthalpy B022/B007  
 of Molybdenum Di- and Trichloride

Table 2. Also the effect produced by various quantities of chlorine in the cylinder during combustion are investigated (Table 3). The enthalpy in the combustion of  $\text{MoCl}_3$  and  $\text{MoCl}_2$  in oxygen at a pressure of 40 atmospheres and at  $25^\circ\text{C}$  was determined. The combustion products were determined by dissolution in  $\text{CCl}_4$  in which  $\text{MoO}_3$  is not soluble and the oxychlorides are easily soluble. The results are given in Table 4. The total quantity of molybdenum and chlorine in the combustion products, as well as the quantity of  $\text{MoO}_3$  was titrimetrically determined, and herefrom the percentual molybdenum- and chlorine content in oxychloride was calculated. The results are given in Tables 5 and 6. The thermograms of the preparations investigated (Fig.), the combustion-enthalpy of  $\text{MoCl}_3$  (Table 7) and  $\text{MoCl}_2$  (Table 8) are given. The results obtained for the formation enthalpy of  $\text{MoCl}_3$  and  $\text{MoCl}_2$  are compared with the data previously obtained (Ref. 5) by the authors for  $\text{MoCl}_5$  and  $\text{MoCl}_4$ , as well as with the results obtained by Brewer (Ref. 1) (Table 9). The preliminary results calculated for the formation enthalpy of  $\text{MoCl}_3$  and  $\text{MoCl}_2$  are  $-93 \pm 4$  kcal/mole and  $-69 \pm 5$  kcal/mole. There are 1 figure, 9 tables, and 12 references, 5 of which are Soviet. ✓B

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VASIL'KOVA, I. V.

S/078/60/005/008/002/018  
B004/B052

AUTHORS: Shchukarev, S. A., Novikov, G. I., Vasil'kova, I. V.,  
Suvorov, A. V., Andreyeva, N. V., Sharupin, B. N.,  
Bayev, A. K.

TITLE: The Thermodynamic Properties of Chlorides and Oxychlorides  
of Tungsten and Molybdenum

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 8,  
pp. 1650-1654

TEXT: By applying various methods, the authors wanted to check the  
formation heats, formation entropies, and formation enthalpies in the case  
of Mo- and W chlorides, published in western papers (Refs. 1, 2). They  
investigated:  $WCl_6$ ,  $MoCl_5$ ,  $WOCl_4$ ,  $MoCl_4$ ,  $WO_2Cl_2$  (obtained by a successive  
chlorination of  $WO_3$  and  $MoO_3$  by means of  $CCl_4$ );  $MoO_2Cl_2$  (obtained by the  
reaction between  $MoO_2$  and  $Cl_2$ );  $MoCl_3$ ,  $WCl_4$ ,  $WCl_5$  (by the reduction of  
 $MoCl_5$  and  $WCl_6$  by means of  $H_2$ ), and  $MoCl_2$ ,  $WCl_2$  (obtained by disproportionation).

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The Thermodynamic Properties of Chlorides  
and Oxychlorides of Tungsten and Molybdenum

S/078/60/005/008/002/018  
B004/B052

tion of  $\text{MoCl}_3$  and  $\text{WCl}_4$ , and  $\text{MoOCl}_4$ ). Two calorimetric methods were applied:

1) Comparison of the heat of solution of the investigated substance to the heat of solution of a substance whose heat of formation is known (Table 1).  
2) Combustion in oxygen (Table 2). Furthermore, the vaporization, depolymerization, dissociation, and disproportionation processes taking place in a state of equilibrium, were spectrophotometrically and tensimetrically investigated (Tables 3, 4). The enthalpies of formation, and partly also the standard entropies of formation were calculated from the experimental data. In Tables 5 (Mo compounds) and 6 (W compounds) they are compared with the data given in Ref. 2 which were adopted almost unchanged by the US National Bureau of Standards (Ref. 9). The values determined by the authors are 1.4 - 1.7 times as high. Therefore, the dependence of the free energy of formation of temperature is different altogether. This is graphically represented in Fig. 1 (comparison of determined  $\Delta H^\circ$  and  $\Delta F^\circ$  for tungsten compounds, with the data of the National Bureau of Standards), and Fig. 2 (comparison of the  $\Delta H_{\text{form}}$  of Cr, Mo, and W chlorides, with the data of the National Bureau of Standards). There are 2 figures, 6 tables, and 9 references: 6 Soviet, 2 US, and 1 Dutch.

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The Thermodynamic Properties of Chlorides  
and Oxychlorides of Tungsten and Molybdenum

S/078/60/005/008/002/018  
B004/B052

ASSOCIATION: Leningradskiy gosudarstvennyy universitet Khimicheskiy  
fakul'tet  
(Leningrad State University Department of Chemistry)

SUBMITTED: May 6, 1959

Card 3/3

SHCHUKAREV, S.A.; VASIL'KOVA, I.V.; SHARUPIN, B.N.

Molybdenum halides. Part 4: Determining the enthalpy of formation of molybdenum dichloride and trichloride. Vest.LGU  
15 no.10:112-120 '60. (MIRA 13:5)  
(Molybdenum chloride) (Enthalpy)

SHCHUKAREV, S.A.; SMIRNOVA, Ye.K.; VASIL'KOVA, I.V.; LAPPO, L.I.

Enthalpies of formation of tantalum pentachloride and pentabromide.  
Vest. LGU 15 no.16:113-119 '60. (MIRA 13:8)  
(Tantalum chloride) (Tantalum bromide)  
(Enthalpy)

SHCHUKAREV, S.A.; VASIL'KOVA, I.V.; ORANSKAYA, M.A. [deceased];  
TSINTSIUS, V.M.; SUBBOTINA, N.A.

Determination of the enthalpy of vanadium tribromide formation.  
Vest LGU 16 no.16:125-129 '61. (MIRA 14:8)  
(Vanadium chloride)  
(Enthalpy)

PERFILOVA, I.L.; KOZLOVA, I.V.; SHCHUKARLV, S.A.; VASIL'KOVA, I.V.

Enthalpy of vanadium oxychloride formation. Vest LGU 16  
no.16:130-135 '61. (MIRA 14:8)

(Vanadium chloride)  
(Enthalpy)

VASIL'KOVA, I.V.; ZAYTSEVA, N.D.; SVALOV, Yu.S.

Molybdenum halides. Determination of the enthalpy of molybdenum  
dioxidybromide. Vest LGU 16 no.16:140-142 '61.

(MIRA 14:8)

(Molybdenum bromide)

(Enthalpy)

SHCHUKAREV, S.A.; VASIL'KOVA, I.V.; ZAYTSEVA, N.D.

Study of molybdenum halides, determination of the enthalpy of  
molybdenum tetrabromide formation. Vest LGU 16 no.22:127-129  
'61. (MIRA 14:11)

(Molybdenum halides) (Heat of formation)

SHCHUKAREV, S.A.; VASIL'KOVA, I.V.; SHARUPIN, B.N.

Molybdenum halides. Part 5: Thermodynamics of  $\text{MoO}_2\text{Cl}$  and  $\text{MoO}_2\text{Cl}_2$   
H<sub>2</sub>O. Vest LON 16 no.22:130-134 '61. (MIRA 14:11)  
(Molybdenum halides)



SHARUPIN, B.N.; VASIL'KOVA, I.V.

Regularity in the enthalpy of formation of oxides and hydroxy-chlorides. Zhur.ob.khim. 31 no.6:2077-2078 Je '61. (MIRA 14:6)

1. Leningradskiy gosudarstvennyy universitet imeni A.A.Zhdanova.  
(Metallic oxides) (Chlorides) (Enthalpy)

S/054/62/CJO/CC1/010/011  
B121/B138

AUTHORS: Shchkarev, S. A., Vasil'kova, I. V., Korol'kov, D. V.,  
Nikol'skiy, S. S.

TITLE: Thermodynamic study of molybdenum dibromide

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii,  
no. 1, 1962, 148-153

TEXT: The actual isobaric specific heat of solid molybdenum dibromide and the temperature dependence of entropy, enthalpy, and free energy of formation of solid  $\text{MoBr}_2$  were calculated. In addition the thermal stability of  $\text{MoBr}_2$  was studied.  $\text{MoBr}_2$  was diluted, after bromination of metallic molybdenum in bromine vapor, with an inert gas at 600-700°C. The isobaric specific heat was determined in a calorimetric apparatus with a sensitivity of 0.00005°C. When solid  $\text{MoBr}_2$  is heated to 800°C in a vacuum no melting occurs, and there is disproportionation which mainly follows the equation  $\text{MoBr}_2(\text{solid}) \rightarrow 1/3 \text{Mo}(\text{KR}) + \text{MoBr}_3(\text{g})$ . The values for enthalpy, entropy, and free energy obtained in solid  $\text{MoBr}_2$  formation are as follows:

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Thermodynamic study of molybdenum ...

S/054/62/CCO/CC1/010/011  
B121/B138

$$\Delta H_{298}^{\circ} \text{ formation MoBr}_2(\text{solid}) = 62.4 \text{ kcal/mole}$$

$$\Delta S_{298}^{\circ} \text{ formation MoBr}_2 = -31.4 \text{ e.u.}$$

$$\Delta F_{298}^{\circ} \text{ formation MoBr}_2(\text{solid}) = -53.0 \text{ kcal/mole.}$$

The temperature dependence of the specific heat of solid MoBr<sub>2</sub> from 298-773°K is expressed by the equation

$$\Delta C_p^{\circ} \text{ MoBr}_2 \text{ formation (solid)} = -5.80 + 30.2 \cdot 10^{-3} T + 0.63 \cdot 10^{-5} T^{-2} \text{ cal/mole-deg}$$

The temperature dependence of the actual specific heat of some chemically resistant glasses such as pyrex, pyrex chemical resistant glass and the chemically resistant Russian glass type П-15 (P-15) studied and the following values were obtained: for pyrex  $C_p = 0.174 + 3.60 \cdot 10^{-4}$  cal/g of degrees t; for pyrex chemical resistant glass

$C_p = 0.178 + 3.13 \cdot 10^{-4}$  cal/g-degrees t, and for P-15 glass

$C_p = 0.181 + 2.09 \cdot 10^{-4}$  cal/g-degrees t. There are 2 figures, 2 tables, and 7 references: 3 Soviet and 4 non-Soviet. The three references to

Card 2/3

1  
Thermodynamic study of molybdenum ...

S/054/62/000/001/010/011  
B121/B138

English-language publications read as follows: L. Brewer et al., Chemistry and metallurgy of miscellaneous materials. N. Y. Mc. Graw-Hill, 1950. F. Rossini, D. Wagman et al. Selected values of chemical thermodynamic properties, US Gov. print. office, Washington, 27, 293, -1952. G. Morey. The properties of glass. N. Y., Reinhold, 80, 216, 1954.

SUBMITTED: June 25, 1960

Card 3/3

S/054/62/000/003/006/010  
B101/B166

AUTHORS: Vasil'kova, I. V., Yefimov, A. I.

TITLE: Interaction in the system  $\text{MoCl}_5$  -  $\text{FeCl}_3$

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii, no. 3, 1962, 98 - 100

TEXT: The fusibility curve for this system was plotted by thermographic investigation in the range 20-350°C. The system forms a simple eutectic, m.p. 185°C, of the composition 93 mole%  $\text{MoCl}_5$ , 7 mole%  $\text{FeCl}_3$ . In the range 50-60 mole%  $\text{MoCl}_5$  the solidus line could be determined exactly whereas the liquidus line was inaccurate. Tensimetric investigation with a glass membrane as a null manometer in the range 20-300°C gave the diagram p versus t. Down to liquidus temperature, the values obtained in cooling agreed with those determined in heating. On further cooling an elevated residual pressure of 100-200 mm Hg was observed due to gaseous chlorine formed on dissociation of  $\text{MoCl}_5$ , which, being poorly soluble in the solid phase, passes over into the gaseous phase on solidification. ✓

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Interaction in the system...

S/054/62/000/003/006/010  
B101/B186

The p-versus-t curve confirmed the complex composition of the gaseous phase of the  $\text{MoCl}_5$  -  $\text{FeCl}_3$  system. Gas pressure over a melt consisting of 25.5 mole%  $\text{MoCl}_5$ , 74.5 mole%  $\text{FeCl}_3$ , is only half the pressure over pure  $\text{MoCl}_5$ . There are 3 figures.

SUBMITTED: June 27, 1961

Card 2/2

S/078/62/007/006/001/024  
B124/B138

AUTHORS: Shchukarev, S. A., Smirnova, Ye. K., Vasil'kova, I. V.,  
Borovkova, N. I.

TITLE: Formation enthalpy of niobium pentabromide and oxytribromide

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 6, 1962, 1213-1215

TEXT: This was determined from their measured hydrolysis enthalpies for a newly developed method of separating niobium and tantalum by fractionating their bromine compounds.  $\text{NbBr}_5$  free from oxybromide was produced by making niobium pentoxide react with  $\text{CBr}_5$  in sealed ampoules evacuated with a forepump. A mixture of  $\text{Nb}_2\text{O}_5$ ,  $\text{NbOBr}_3$ , and unreacted  $\text{CBr}_4$  was obtained by 18-20 hr heating at  $200^\circ\text{C}$ . The ampoule was cooled, the gaseous reaction products were removed, the ampoule was sealed again and heated for 8-10 hr at  $360-380^\circ\text{C}$ . The reaction products  $\text{CO}$ ,  $\text{COBr}_2$ , and  $\text{Br}_2$  were drawn off with a forepump at  $70^\circ\text{C}$ . The resulting  $\text{NbBr}_5$  was purified

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S/078/62/007/006/001/024  
B124/B138

Formation enthalpy of niobium ...

from  $\text{Nb}_2\text{O}_5$  by double sublimation in vacuo.  $\text{NbOBr}_3$  was produced by oxidation of  $\text{NbBr}_5$  at  $150-160^\circ\text{C}$  and bromination of  $\text{Nb}_2\text{O}_5$  with  $\text{CBr}_4$  at  $190-200^\circ\text{C}$ . The heat released during hydrolysis of the bromides was determined calorimetrically at  $26^\circ\text{C}$  to be  $68.3 \pm 0.9$  kcal/mole ( $\text{NbBr}_5$ ) and  $34.8 \pm 0.6$  kcal/mole ( $\text{NbOBr}_3$ ). The enthalpies calculated on the basis of published data were:  $\Delta H_{\text{NbBr}_5}^\circ = -135.2 \pm 1.2$  kcal/mole and

$\Delta H_{\text{NbOBr}_3}^\circ = -179.3 \pm 1.0$  kcal/mole. There are 3 tables. The three most

important English-language references are: K. M. Alexander, F. Fairbrother, J. Chem. Soc. (London), p. 223 (1949); F. Fairbrother, A. H. Cowley, N. Scott, J. of the Less. Common Metals, 1, 206 (1959); G. Z. Humpley, J. Amer. Chem. Soc. 76, 978 (1954).

SUBMITTED: July 14, 1961

Card 2/2



SHCHUKAREV, S.A.; SMIRNOVA, Ye.K.; VASIL'KOVA, I.V.; BOROVKOVA, N.I.

Enthalpy of formation of niobium pentabromide and oxytribromide.  
Zhur.neorg.khim. 7 no.6:1213-1215 Je '62. (MIRA 15:6)  
(Niobium bromides) (Heat of formation)

SHCHUKAREV, S.A.; VASIL'KOVA, I.V.; PERFILOVA, I.L.; CHERNYKH, L.V.

Enthalpy of vanadium trichloride formation. Zhur.neorg.khim. 7 no.7:  
1509-1511 J1 '62. (MIRA 16:3)

(Vanadium chloride)

(Heat of formation)

SHCHUKAREV, S.A.; VASIL'KOVA, I.V.; KOROL'KOV, D.V.; NIKOL'SKIY, S.S.

Thermodynamic study of molybdenum dibromide. Vest. LGU 17 no.4:  
148-155 '62. (MIRA 15:3)  
(Molybdenum bromides—Thermal properties)

VASIL'KOVA, I.V.; YEFIMOV, A.I.

Interaction in the systems molybdenum with pentachloride - alkali  
metal chloride. Zhur.ob.khim. 32 no.8:2742-2743 Ag '62.  
(MIRA 15:9)

(Molybdenum chloride) (Alkali metal chlorides)

S/080/62/035/007/002/013  
D267/D307

AUTHORS: Shchukarev, S.A., Vasil'kova, I.V. and Shalukukhina, I.M.

TITLE: Thermodynamic analysis of the chlorination of molybdates with the gaseous mixture of chlorine with sulfur chlorides

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 7, 1962, 1459-1463

TEXT: It was shown earlier that a mixture of  $Cl_2$  with sulfur chlorides begins to react with calcium and lead molybdates and with  $MoO_3$  at about 160-170°C, giving rise to volatile Mo chlorides, chlorides of the corresponding metal and  $SO_2$ . To evaluate the processes involved from the thermodynamic standpoint and to find there- by the most probable reactions of chlorination, the values of enthalpies, free energies and  $\log K$  were calculated in the interval 293 - 800°K for all possible reaction schemes between  $CaMoO_4$ ,  $PbMoO_4$  and  $MoO_3$ , on the one hand, and mixtures of  $Cl_2$  with  $S_2Cl_2$  (or pure  $Cl_2$ ),

Card 1/2

Thermodynamic analysis ...

S/080/62/035/007/002/013  
D267/D307

on the other. Most of these reactions are exothermic; the analysis of the obtained thermodynamic magnitudes yielded the most probable reaction schemes and showed that the chlorination with the mixture of  $\text{Cl}_2$  with sulphur chlorides is more advantageous than chlorination with  $\text{Cl}_2$  alone. There is 1 figure and 1 table. ✓

SUBMITTED

May 29 1961

Card 2/2

SHCHUKAREV, S.A.; VASIL'KOVA, I.V.; KOROL'KOV, D.V.

Interaction of di-, tri-, and tetrabromides of titanium with the  
bromides of rubidium and cesium. Zhur. neorg. khim. 8 no.8:1933  
1937 Ag '63. (MIRA 16:8)

(Titanium bromides) (Alkali metal bromides)

VASIL'KOVA, I.V.; ZAYTSEVA, N.D.; SHAPKIN, P.S.

Interaction of tungsten hexa- and pentachloride with sodium  
and potassium chlorides. Zhur. neorg. khim. 8 no.10:2360-  
2364 0 '63. (MIRA 16:10)

(Tungsten chlorides) (Alkali metal chlorides)



VASILKOVA, I.V.; ZAYTSEVA, N.D.; PETROVA, V.A.

Systems  $\text{RbCl} - \text{WCl}_6$ ,  $\text{RbCl} - \text{WCl}_5$ ,  $\text{CsCl} - \text{WCl}_6$ , and  $\text{CsCl} - \text{WCl}_5$ .  
Zhur. neorg. khim. 8 no.10:2369-2371 0 '63. (MIRA 16:10)

(Tungsten chlorides) (Alkali metal chlorides) (Systems (Chemistry))

SHCHUKAREV, S.A.; SMIRNOVA, Ye.K.; VASIL'KOVA, I.V.

Thermographic analysis of the system  $\text{RbCl} - \text{NbOCl}_3$  and  $\text{CsCl} - \text{NbOCl}_3$ . Vest. LGU. 18 no.16:132-133 '63. (MIRA 16:11)

SHCHUKAREV, S.A.; SMIRNOVA, Ye.K.; VASIL'KOVA, I.V.; KOTOVA, M.S.

Enthalpy of formation of sodium and potassium chlorotantalates. Vest. LGU 18 no.22:174-176 '63. (MIRA 17:1)

VASIL'KOVA, I.V.; YEFIMOV, A.I.; PITIRIMOV, B.Z.

Enthalpy of the formation of  $\text{Na}_3\text{CrCl}_6$ ,  $\text{K}_3\text{CrCl}_6$ , and  
 $\text{K}_3\text{Cr}_2\text{Cl}_9$ . Zhur. neorg. khim. 9 no.3:754-755 Mr '64.  
(MIRA 17:3)

SMIRNOVA, Ye.K.; VASIL'KOVA, I.V.; KUDRYASHOVA, N.F.

Enthalpy of the formation of the chloroniobates and chlorotantalates  
of rubidium and cesium. Zhur. neorg. khim. 9 no.2:489-490 F'64.

(MIRA 17:2)

VASIL'KOVA, I.V.; YEFIMOV, A.I.; PITIRIMOV, B.Z.

Complex formation in the systems  $\text{MeCl} - \text{CrCl}_3$  (Me- an alkaline metal).  
Zhur.neorg.khim. 9 no.4:900-904. Ap '64. (MIRA 17:4)



SMIRNOVA, Ye.K.; VASIL'KOVA, I.V.

Oxychloroniobates of alkali metals of the composition  $Me_2^I NbOCl_5$ .  
Vest. LGU 19 no.4:164-165 '64. (MIRA 17:3)



**"APPROVED FOR RELEASE: 08/31/2001**

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**APPROVED FOR RELEASE: 08/31/2001**

**CIA-RDP86-00513R001858810018-1"**

SMIRNOVA, Ye.K.; VASIL'KOVA, I.V.

Chloroniobates (IV) of alkali metals. Vest. LGU 20 no.10:161-162  
'65. (MIRA 18:7)

SHCHUKAREV, S.A.; VASIL'NOVA, I.V.; MARVINOK, G.M.

Heats of formation of solid chloride complexes of manganese,  
iron, cobalt, copper, and zinc. Vest. LGU 20 no.16:145-147 '65.  
(MIRA 18:9)

MARTYNOVA, N.S.; VASIL'KOVA, I.V.; SUSAREV, M.P.

Evaluation of the concentration region of the location of  
ternary eutectics in common eutectic systems according to  
the data on binary eutectics and components. Vest. LGU 20  
no.22:96-100 '65. (MIRA 18:12)

KUDRYASHOVA, Z.P.; VASIL'KOVA, I.V.; SUSAREV, M.P.

Application of differential equations of solid phase solubility isotherms in an ideal melt for evaluating the reliability of experimental data; system  $\text{NH}_4\text{NO}_3 - \text{KNO}_3 - \text{Pb}(\text{NO}_3)_2$ . Zhur. prikl. khim. 38 no.10:2252-2257 0 '65. (MIRA 18:12)

1. Submitted July 8, 1963.

VASILKOVA, I.V.; KRIVOUSOVA, I.V.; SUSAREV, M.P.; TOLKACHEV, S.S. [deceased]

X-ray study of the mutual solubility of solid phases in the  
ternary systems  $KCl - NaCl - CrCl_3$  and  $KCl - NaCl - VCl_3$ .  
Vest. LGU 20 no.16:126-132 '65. (MIRA 18:9)

KRIVOUSOVA, I.V.; VASIL'KOVA, I.V.; SUS'REV, M.F.

Thermographic study of the system  $\text{Cl}_3 - \text{NaCl} - \text{KCl}$  Zhur. prikl.  
khim. 37 no.11:2348-2353 N '64 (MIRA 18:1)



KRIVOUSOVA, I.V.; VASIL'KOVA, I.V.; SUSANEV, H.P.

Concentration regions of ternary eutectics in the system  
NaCl - KCl -  $K_3VO_4$ . Zhur. prikl. Khim. 37 no.10:2198-2203  
0 '64. (MIRA 17:11)

VASIL'KOVA, K.I.

Correction of scoliosis before fizing the spine. Ortop.travm. i  
protez. 17 no.6:91 N-D '56. (MIRA 10:2)

1. Iz kafedry ortopedii i protezirovaniya (zaveduyushchiy --  
zasluzhennyi deyatel' nauki , professor M.I.Kuslik) Gosudarstvennogo  
Instituta dlya usovershenstvovaniya vrachey i ortopedicheskogo  
otdeleniya (zaveduyushchiy - professor Ya.S.Yusevich) Leningradskogo  
nauchno-issledovatel'skogo instituta travmatologii i ortopedii  
(direktor - professor V.S.Balakina)

(SPINE--ABNORMALITIES AND DEFORMITIES)

VASIL' KOVA, K.I., kand.med.nauk

Vreden's "inhibition of flexors" in treating spastic paresis.  
Ortop.travm. i protez. 18 no.4:66 J1-Ag '57. (MIRA 11:1)

1. Iz kafedry ortopedii i protezirovaniya (zav. - zasl. deyatel' nauki prof. M.I.Kuslik) Gosudarstvennogo instituta dlya usovershenstvovaniya vrachey (dir. - prof. N.I.Blinov) i ortopedicheskogo otdeleniya (zav. - prof. Ya.S.Yusevich) Leningradskogo nauchno-issledovatel'skogo instituta travmatologii i ortopedii (dir. - prof. V.S.Balakina)  
(PARALYSIS)

VASIL'KOVA, K.I.

Bone plastic surgery in scoliosis following preliminary stretching.  
Khirurgiya 34 no.7:93-98 J1 '58 (MIRA 11:9)

1. Iz ortopedicheskogo otdeleniya (zav. - prof. Ya.S. Yusevich)  
Leningradskogo instituta travmatologii i ortopedii (dir. - prof.  
V.B. Balanina) i kafedry ortopedii (zav. - prof. M.I. Kuslik)  
Leningradskogo Gosudarstvennogo instituta dlia spetsializatsii  
i usovershenstvovaniya vrachey.

(SCOLIOSIS, surgery

plastic surg. after preliminary stretching,  
technic (Rus))

VASIL'KOVA, K.I.

Determination of the force for correcting scoliosis in spine  
traction. Trudy Len.gos.nauch.-issl.inst.travm.i ortop. no.7:  
177-182 '58. (MIRA 13:6)

(SPINE--ABNORMITIES AND DEFORMITIES)

VASIL'KOVA, K.I.

Modification of the Kofmann-Shants operation (transposition of the fibular and posterior tibial muscles in talipes equinus).  
Trudy Len.gos.nauch.-issl.inst.travm.i ortop. no.7:314-315  
'58. (MIRA 13:6)

1. Iz ortopedicheskogo otdeleniya Leningradskogo gosudarstvenno-  
go nauchno-issledovatel'skogo instituta travmatologii i orto-  
pedii.

(FOOT--ABNORMALITIES AND DEFORMITIES)

VASIL'KOVA, K.I., kand.meditsinskikh nauk

Late results of osteoplastic fixation of the spine in severe forms of scoliosis. Ortop. travm. i protez, 21 no. 7:19-23 J1 '60.

(MIRA 13:10)

1. Iz Ortopedicheskoy kliniki (zav. kafedroy - zasluzhennyy devatel nauki prof. M.I. Kuslik) Leningradskogo ordena Lenina Instituta usovershenstvovaniya vrachey (dir. - prof. N.I. Blinov) i ortopedicheskogo otdeleniya (zav. - prof. Ya.S. Yusevich) Leningradskogo instituta travmatologii i ortopedii (dir. - prof. V.S. Balakina).

(SPINE—SURGERY)

VASIL'KOVA, K. I., kand. med. nauk, (Leningrad 101, Kronverkskaya ul.  
d. 1, kv. 5)

Apparatus for spinal redressment and its use in scoliosis. (Orthop.,  
travm. i protez. no. 11:16-19 '61. (MIRA 14:12)

1. Iz kafedry ortopedii i protezirovaniya (zav. - zasluzh. deyatel'  
nauki prof. M. I. Kuslik) Gosudarstvennogo ordena Lenina instituta  
usovershenstvovaniya vrachey (dir. - dotsent A. Ye. Kiselev) i  
ortopedicheskogo otdeleniya (zav. - prof. Ya. S. Vusevich) Lenin-  
gradskogo nauchno-issledovatel'skogo instituta travmatologii i  
ortopedii (dir. - prof. V. S. Balakina)

(SPINE ABNORMALITIES AND DEFORMITIES)



VASIL'KOVA, K.I., dotsent

Osteoid osteoma at an unusual site. Ortop., travm. i protez. no.9:  
80-81 '62. (MIRA 17:11)

... .. i ... .. zasluzhennyy deyatel' nauki prof.  
... .. instituta usovershenstvovaniya vrachey  
i ortopedicheskogo otdeleniya (zav. prof. Ya.S. Yusevich) Lenin-  
gradskogo instituta travmatologii i ortopedii.

VASIL'KOVA, L.P.; Primal uchastiye SHALDENKOV, I.P.

Biochemical purification of the industrial waste waters  
from the production of vinyl acetate and the polymers based  
on it. Trudy VNIIT no.12:290-305 '63. (MIRA 18:11)

VASIL'KOVA, M.V., starshiy nauchnyy sotrudnik

Burning and shedding of leaves in fruit trees. Zashch. rast.  
ot vred. i bol. 7 no. 10:33-34 0 '62. (MIRA 16:6)

1. Melitopol'skaya opyt'naya stantsiya sadovodstva.  
(Plants, Effect of chemicals on)

VASIL'KOVA, N.N.; TEREMITSKAYA, A.G.; SHATSKAYA, V.T.

Tin deposits associated with subvolcanic bodies. Sov.geol.  
2 no.10:81-97 0 '59. (MIRA 13:4)

1. Vsesoyuznyy institut mineral'nogo syr'ya (VIMS).  
(Sikhote-Alin' Range--Tin ores)

3(5)

SCV/11-59-5-9/14

AUTHOR: Vasil'kova, N.N.

TITLE: The Metastable Potassium Feldspar and Zeolite in Ores of the Dal'netayezhnoye Deposit (Metastabil'nyy kaliyevyy polevoy shpat i tseolit v rudakh Dal'netayezhnogo mestorozhdeniya)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya geologicheskaya, 1959, Nr 5, pp 113-118 (USSR)

ABSTRACT: The sulfite-cassiterite tin ores of the Dal'netayezhnoye deposits in the Primor'ye (the Soviet far eastern maritime region) were formed near the earth's surface and far from a magmatic hearth. According to the All-Union Institute of Mineral Raw Materials (VIMS), there is a close dependence of conditions of formation of sulfide-cassiterite deposits on the depth of formation of intrusive rocks. In consequence, all such deposits are divided into three groups 1) deposits territorially and genetically closely linked

Card 1/5

SOV/11-59-5-9/1"

The Metastable Potassium Feldspar and Zeolite in Ores of the Dal'netayezhnoye Deposit.

with magmatic bodies presently outcropped; 2) deposits not directly linked with a magmatic source, but having in their limits aureols of contact-metamorphic transformations with regular mineral changes occurring with an increasing distance from them; 3) deposits having neither direct nor indirect links with intrusive rocks. Deposits belonging to the first two groups were formed under conditions of sharp changes of temperature: high initial temperature in the process of crystallization of ores and lower temperature during the ore formation process. This explains the occurrence of peculiar mineral forms and mineral associations, as observed in the Dal'netayezhnoye deposits. These deposits present a complicated system of mineralized crustal zones in the sandstone-slate Mesozoic stratum. Magmatic formations of the deposits consist of

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SOV/11-59-5-2/14

The Metastable Potassium Feldspar and Zeolite in Ores of the Dal'netayeshnoye Deposit.

large dykes of granite-porphyrates, various porphyrites and lamprophyres. The formation of ores occurred in the following main stages of mineralization: 1) arseno-pyrite quartziferous with potassium feldspar; 2) pyrrhotitic; 3) pyrite-ankeritic 4) the quartz-adular stage, ended with the deposition of late pyrite and calcite. The author describes the association of potassium feldspar and zeolite with cassiterite, never before described. There are 2 generations of potassium feldspar: the first associated with quartz-cassiterite ores; second intergrowing with the later oreless quartz. Both generations have identical physical, optical and other features. The results of all analyses are given. According to the author, these analyses show a relation between potassium feldspar and the sandine-like form, which in the process of crystallization of ores, is replaced by adular. The sandine is a high temperature

Card 3/5

30V/11-59-5-9-/14

The Metastable Potassium Feldspar and Zeolite in Ores of the Dal'netayezhnoye Deposit

variety of the orthoclase. The potassium zeolite-leonhardite is the principal component of the cassiterite-zeolite ores filling one of the vein of the Dal'netayezhnoye deposit, and is also found in pockets in sandstone of the deposits. The zeolite in these ores is closely associated with quartz, cassiterite, arsenopyrites and calcium-containing minerals: actinolite, fluorite, axinite and epidotes. In regard to all these minerals, the zeolite is xenomorphic, filling the spaces between the grains or enclosing them like poikilite phenocrysts. These associations, as well as the metastable varieties of potassium feldspar, are indicators of sharp changes of temperature during the ore formation process. These changes are explained by specific features of the genesis of the Dal'netayezhnoye deposits, probably formed near the plutonic magmatic sources, their upper part being

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SOV/11-59-5-9/14

The Metastable Potassium Feldspar and Zeelite in Ores of the  
Dal'netayezhnoye Deposit

near the earth's surface. The following scientists  
are mentioned by the author: A.Ye. Fersman, S.S.  
Smirnov, G.A. Sidorenko, Academician D.S. Belyankin,  
and L.Polupanova. There are 3 tables, 2 graphs, 2  
photographs and 3 references, 2 of which are Soviet  
and 1 American.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut min-  
eral'nogo syr'ya (the All-Union Scientific Research  
Institute of Mineral Raw Material), Moscow.

SUBMITTED: July 15 1957

Card 5/5

VASIL'KOVA, N.N.; KUZ'MIN, V.I.

Alteration of datolite bearing rocks in the zone of hypogenesis.  
Geol.rud.mestorozh. no.6:68-71 M-D '61. (MIRA 14:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut mineral'nogo  
syr'ya.

(Datolite)

VASIL'KOVA, N. N.

Sibirskite, a new calcium borate. Zap. Vses. min. ob-va 91 no. 4:  
455-464 '62. (MIRA 15:10)

1. Vsesoyuznyy institut mineral'nogo syr'ya (VIMS), Moskva.

(Calcium borates)

VASIL'KOVA, Nina Nikitichna; SOLOMKINA, Sof'ya Grigor'yevna;  
KRUTOVA, I.Ye., ved. red.; ROZHKOVA, Ye.V., nauchn. red.

[Typomorphic characteristics of fluorite and quartz; on the basis of a study of their physical and physicochemical properties] Tipomorfnye osobennosti fliuorita i kvartsa; na osnovanii izucheniia ikh fizicheskikh i fiziko-khimicheskikh svoistv. Moskva, Nedra, 1965. 132 p.  
(MIRA 18:10)

LOMONOSOV, Ivan Grigor'yevich, starshiy nauchnyy sotrudnik; ARYKIN, Ivan Grigor'yevich; VASIL'KOVA, Regina Yevgen'yevich; ZHURENKOV, Yevgeniy Aleksandrovich; LEBEDEV, Mikhail Petrovich; OVCHINNIKOVA, Dina Mikhaylovna; YUZVUK, Vladimir Yefimovich. Prinimali uchastiye: ARYKIN, I.G., starshiy nauchnyy sotrudnik; YUZVUK, V.Ye., starshiy nauchnyy sotrudnik; LEBEDEV, M.P., starshiy nauchnyy sotrudnik; OVCHINNIKOVA, D.M., mladshiy nauchnyy sotrudnik; VASIL'KOVA, R.Ye., mladshiy nauchnyy sotrudnik; ZHURENKOV, Ye.A., mladshiy nauchnyy sotrudnik. ZHURAVLEV, B.A., red.izd-va; PARAKHINA, N.L., tekhn.red.

[Album of designs of dams to be built on timber floating rivers]  
 Al'bom konstruktsii lesosplavnykh plotin. Moskva, Goslesbumizdat, 1959. 212 p. (MIRA 13:7)

1. Tsentral'nyy nauchno-issledovatel'skiy institut lesosplava (for all, except Zhuravlev, Parakhina).  
 (Lumber--Transportation) (Dams)

L 28849-66 FWP(l)/FWT(m)/T/EWP(v)/EWP(t)/ETI JD/MM

ACC NR: AP6013819 (A) SOURCE CODE: UR/0356/65/000/012/0049/0051

AUTHOR: Mamuliya, G. (Engineer); Vasil'kova, Ye. (Engineer) <sup>38</sup>  
<sub>B</sub>

ORG: State All-Union Scientific Research Institute of Technology for Repair and Operation in Machinery and Tractor Depot (Gosudarstvennyy vsesoyuznyy nauchno-issledovatel'skiy tekhnologicheskii institut remonta i ekspluatatsii mashinno-traktornogo parka)

TITLE: Welding of machine parts and assemblies in carbon-dioxide gas

SOURCE: Tekhnika v sel'skom khozyaystve, no. 12, 1965, 49-51

TOPIC TAGS: welding equipment, repair welding, arc welding, automatic welding, spot welding, welding technology /A-547-R<sup>26</sup>  
welding equipment, A-537 welding equipment, EZG-4 welding equipment<sup>10</sup>

ABSTRACT: Welding methods used for repairing agricultural machines are discussed. The most effective method is a semi-automatic electric arc welding with a carbon-dioxide gas shielding. The equipment used for this kind of welding is described. A welding device of A-547-R type is applied to thicknesses up to 3 mm while thicker parts are welded by A-537 type. These devices consist of an arc torch, electrode-wire feed mechanism, control panel, carbon-dioxide gas cylinder, preheater,

UDC: 621.791.037:661.97

Card 1/2

L 28849-66

ACC NR: AP6013819

0

rectifier, etc. The A-537 type is equipped with a water-cooled torch. The A-547-R type arrangement is schematically illustrated. A special arrangement for spot welding and electric riveting is designed by using an electric-arc riveter of EZG-4 type. The essential data on these three types of welding equipment is summed up in a table. The recommended welding data for various metal thicknesses are also tabulated. The welding technique applied to various machine and tractor parts is briefly discussed and some efficient methods are recommended. Orig. art. has: 3 tables and 1 figure.

SUB CODE: 13 / SUBM DATE: None

Card 2/2 00





L 6377-1

ACCESSION NR: AP501/372

carotenoids in the presence of ethyl alcohol with a decrease in the carotenoid:  
chlorophyll ratio. The oxidizing utilization of glucose is probably to be

the main source of energy for the cells.

Orig. art. has 2 tables.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova  
(Moscow State University)

SUBMITTED: 23Jun64

ENCL: CO

SUB CODE: LS

NO REF SOV: 007

OTHER: 002

JPRS

Card 2/2

GUSEV, M.V.; VASIL'KOVA, Ye.I.

Changes in the composition and content of pigments of blue-green algae in the presence of additional carbon and nitrogen sources. Mikrobiologiya 34 no.3:477-482 My-Je '65. (MIRA 18:11)

1. Biologo-pochvennogo fakul'teta Moskovskogo gosudarstvennogo universiteta imeni M.V.Lomonosova.

L 27420-66 EWI(1) SCIB DD  
 ACC NR: AP6017696  
 SOURCE CODE: UR/0220/65/034/003/0477/0482  
 AUTHOR: Gusev, M. V.; Vasil'kova, Ya. I. 30  
 ORG: Soil Biology Faculty, Moscow State University im. M. I. Lomonosov (Biologo-  
 pochvennyy fakul'tet Moskovskogo gosudarstvennogo universiteta) B  
 TITLE: Change in composition and pigment content of blue-green algae<sup>v</sup> in the presence  
 of additional sources of carbon and nitrogen  
 SOURCE: AN SSSR. Mikrobiologiya, v. 34, no. 3, 1965, 477-482  
 TOPIC TAGS: algae, chlorophyll, protein, plant chemistry, plant metabolism  
 ABSTRACT: Phycoerythrin appeared in the cells of the blue-green alga  
 Anabaena variabilis grown on a medium with additional sources of carbon  
 (glucose, ethanol, or acetate) and nitrogen (nitrate or ammonium salts).  
 This happened even at light intensities which are insufficient for the  
 production of this pigment in a mineral medium without additional sources  
 of nitrogen and carbon. In a similar situation no changes were noted in  
 the composition of Hapalosiphon fontinalis pigments.  
 When Anabaena variabilis and Hapalosiphon fontinalis were grown in the  
 presence of additional sources of carbon and nitrogen, the following changes  
 took place in the content and ratios of the pigments: (1) the content of  
 all pigments decreased in the presence of nitrate; (2) the content of  
 bilichromoproteins and chlorophyll A increased in the presence of ammonium  
 UDC: 582.232-11  
 Card 1/2

L 27420-66

ACC NR: AP6017696

as did the bilichromoprotein: chlorophyll A ratio; (3) the content of chlorophyll A and bilichromoproteins increased in the presence of additional carbon compounds as did the bilichromoprotein: chlorophyll A ratio.

The carotenoid: chlorophyll A ratio decreased in the presence of additional carbon compounds in *Anabaena variabilis*, but not in *Hapalosiphon fontinalis*. Orig. art. has: 2 figures and 3 tables. [JPRS]

SUB CODE: 06 / SUBM DATE: 22Jul64 / ORIG REF: 006 / OTH REF: 003

Card 2/2

LEONT'YEV, M.N.; prignalni uchastiye: BAKINA, K.V.; KISELEVA, O.M.;  
KRAVETS, Ye.A.; KARLOVA, S.A.; DUBNOVA, S.S.; SEMENYAKO, A.G.;  
ZAMORINA, Z.T.; MILANINA, Ye.F.; KOZEL'SKAYA, O.P.; VASIL'KOVA,  
Z.I.; ZOTOV, S.N.; YERMOLOV, A.I.; BEZLYUDNAYA, V.V.; NAZAROV,  
B.A.; ASHIKHMINA, V.M.; ASYAKINA, A.N.; TROITSKAYA, B.I.;  
SKVORTSOV, A.V., red.; LESHAKOV, I.T., tekhn. red.

[The economy of Orlov Province; a statistical manual] Narodnoe  
khoziaistvo Orlovskoi oblasti; statisticheskii sbornik. Orel,  
Gosstatizdat, 1960. 281 p. (MIRA 14:5)

1. Orel(Province) Statisticheskoye upravleniye. 2. Zamestitel'  
nachal'nika statisticheskogo upravleniya Orlovskoy oblasti  
(for Leont'yev). 3. Statisticheskoye upravleniye Orlovskoy ob-  
lasti (for all except Leshakov) 4. Nachal'nik statisticheskogo  
upravleniya Orlovskoy oblasti (for Skvortsov )  
(Orlov Province—Statistics)

ASHBEL', S.I., prof.; POKROVSKAYA, E.A.; SOKOLOVA, V.G., kand.biol.nauk;  
VASIL'KOVA, Z.Ye., kand.med.nauk

Effectiveness of oletetrin treatment of infectious inflammatory  
diseases of respiratory organs and intestines. Sov.med. 28  
no.12:91-95 D '65. (MIRA 18:12)

1. Klinicheskiy otdel (zav. - prof. S.I.Ashbel') Gor'kovskogo  
nauchno-issledovatel'skogo inatituta gigiyeny truda i professio-  
nal'nykh zabolevaniy i kafedra detskikh infektsiy (zav. - dotsent  
N.N.Fayerman) Gor'kovskogo meditsinskogo instituta.

SEMEYOV, M.S.; VASIL'KOVICH, I.A.

Using lignin as a fuel. Gidroliz i lesokhim.prom. 13 no.2:15-17  
'60. (MIRA 13:6)

1. Tavdinskiy gidroliznyy zavod.  
(Lignin)

SMORKALOV, V.T., red.; KARDASH, F.G., st. varshchik, red.;  
IVANOVA, V.Ya., red.; SUDAKOVA, Yu., red.; VASIL'KOVICH,  
L.A., red.; GETLING, Yu., red.

[Plant of miraculous transformations; everyday work of  
the employees of the Tavda Hydrolysis Plant] Zavod chu-  
desnykh prevrashchenii; trudovye budni kollektiva Tavdin-  
skogo gidroliznogo zavoda. Sverdlovsk, Sredne-Ural'skoe  
knizhnoe izd-vo, 1964. 50 p. (MIRA 18:4)

1. Direktor Tavdinskogo gidroliznogo zavoda Ural (for  
Kardash). 2. Predsedatel zavodskogo komiteta Tavdinskogo  
gidroliznogo zavoda, Ural (for Ivanova). 3. Sekretar'  
Vsesoyuznogo Leninskogo Kommunisticheskogo soyuza molodezhi  
(for Sudakova). 4. Nachal'nik planovogo otdela Tavdinskogo  
gidroliznogo zavoda, Ural (for Vasil'kovich).



BORISOVA, A.G.; BOCHANTSEV, V.P.; BUTKOV, A.Ya., dotsent; VASIL'KOVSKAYA, A.P.;  
VVEDENSKIY, A.I., dotsent; GOLODKOVSKIY, V.L.; GONCHAROV, N.P.  
[deceased]; DROBOV, V.P., professor; KOROTKOVA, Ye.Ye.; KOSTINA, K.P.;  
KUDRYASHEV, S.N. [deceased]; LAKHINA, M.M.; LINCHEVSKIY, I.A.;  
MIRONOV, B.A. [deceased]; PAZIY, V.K.; POYARKOVA, A.I.; PROTOPOPOV,  
G.F.; SUMNEVICH, G.P. [deceased]; KHAL'ZOVA, K.P.; YUZEPCHUK, S.V.;  
KOROVIN, Ye.P., professor, glavnyy redaktor; ZAKIROV, K.Z., professor,  
redaktor; SEIPIUKHIN, A.Ya, redaktor izdatel'stva

[The flora of Uzbekistan] Flora Uzbekistana. Glav. red. Ye.P.Korovin.  
Tashkent, Izd-vo Akademii nauk UzSSR. Vol.3. 1955. 825 p. (MIRA 9:10)

1. Deyatvitel'nyy chlen AN UzSSR (for Korovin)  
(Uzbekistan--Botany)

PIS'MAN, I.I.; DALIN, M.A.; VASIL'KOVSKAYA, G.V.

Dimerization of ethylene on nickel and cobalt catalysts.  
Azerb. khim. zhur. no.3:69-74 '64. (MIRA 18:5)

S/130/61/000/005/003/005  
A006/A101

AUTHORS: Sviridenko, P. P., Kazachkov, Ye. A., Vasil'kovskaya, N. P., Lesenko, I. I.

TITLE: Riser with an air gap in the wall

PERIODICAL: Metallurg, no. 5, 1961, 15 - 18

TEXT: Risers used at "Azovstal'" for delayed cooling of feed head metal, are lined with chamotte bricks. The lining is 120 mm thick. Heat insulating conditions can be improved by employing insulated bricks, and the best means of insulation for this purpose is air. Investigations were made to use the heat insulating properties of an air gap in the lining of risers. The use of shaped bricks, which is the simplest method employed at the KMK, was not possible at Azovstal' due to the lack of a ceramic shop. Therefore, standard brick dimensions and shapes had to be employed. The existing design of risers was modified by two methods; 1. In the shell of a conventional riser, 8 - 10 mm thick steel sheets were inserted and fastened by electric welding process in such a manner, that an internal shell was formed that was separated from the external shell by a 70 mm wide gap. The gap was lined with chamotte bricks. 2) A special riser was employed with horizontal ribs in the center of the shell height, supporting

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Riser with an air gap in the wall

S/130/61/000/005/003/005  
A006/A101

the bricks. Between the brick lining and the shell there was a 60 mm wide air gap. Heat balances were drawn up for conventional and experimental risers and for this purpose the distribution of temperature along the wall thickness of the risers was determined. Heat losses in the risers are characterized as follows:

	Riser with conventional lining	Riser with air gap
Total heat losses through the feed head at the end of ingot solidifying, in %:	100	59
of which:		
losses to the surrounding medium	22	45
absorbed by the refractories of the risers	56	24
absorbed by the riser shell	22	31

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S/130/61/000/005/003/005  
A006/A101

Riser with an air gap in the wall

Improved heat insulation reduces the metal volume in the feed head and increases the ingot weight. The upper section of the ingot which is most contaminated with non-metallic impurities, can thus be cut off. Experimental castings made with the new risers showed satisfactory results. However, their large-scale production was impeded by the low stability of the lining. Therefore, a new variant of the risers was designed (Figure 3) where the uniform suspension of the ingot over the whole perimeter of the mold and riser butt line, is assured by an excess of the cross section of the riser (885 x 790) over that of the mold (865 x 770). Grooves, 50 mm wide, in the riser shell prevent the falling out of the upper rows of the lining, and 50 mm - diameter apertures are provided in the walls for the elimination of gases from internal cavities. Experiments showed that risers lined with straight bricks were not less stable than those lined with shaped bricks. Their use will reduce rejects due to contaminations with non-metallic impurities. There are 3 figures. ✓

ASSOCIATION: Zavod "Azovstal'" (Azovstal' Plant); Zhdanovskiy metallurgicheskiy institut (Zhdanov Metallurgical Institute).

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VASIL'KOVSKIY, A. A.

Dissertation: "The Propagation and Absorption of Radiation in a Many-Layer, Thin-Wall Plate." Cand Phys-Math Sci, Odessa State U, Odessa, 1953. (Referativnyy Zhurnal--Fizika--Moscow, Apr 54)

SO: SUM 243, 19 Oct 1954

FD-3213

*USSR/Physics - Optics*  
USSR/Physics - Optics. Reflection

Card 1/1      Pub. 153-22/28

Author      : Vasilkovskiy A. A.

Title      : Theory of optic computation of multiple periodic laminae

Periodical : Zhur. Tekh. Fiz., 25, No 7, 1326-1331, 1955

Abstract   : Formulas are derived for amplitude coefficients of passing and reflection and their ratios, applicable to optic computation of multiple laminae, consisting of periodically recurrent laminae combinations. Ten references, including 4 foreign.

Institution: --

Submitted   : July 21, 1954



VASIL'KOVSKIY, A.A.

Calculation of a thin, multilayer plate as a one-layer plate with  
effective refraction index. Opt. i spektr. 2 no.2:229-235 F '57.  
(MLRA 10:3)

(Refraction)

ACC NR: AP6025595

SOURCE CODE: UR/0413/66/000/013/0033/0033

INVENTORS: Vasil'kovskiy, A. A.; Nechipurenko, V. V.; Sokolenko, V. I.

ORG: none

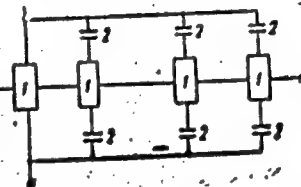
TITLE: Multilayer film Hall emf detector. Class 21, No. 183248

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 13, 1966, 33

TOPIC TAGS: Hall effect, hf component, *electromagnetic property*

ABSTRACT: This Author Certificate presents a multilayer film Hall emf detector according to Author Certificate No. 119556. To use the detector for measuring high frequency power, capacitors deposited between the current electrodes of neighboring layers are connected in parallel relative to the controlling current in the loops joining the remaining layers of the detector (see Fig. 1).

Fig. 1. 1 - detector layers; 2 - capacitors



Orig. art. has: 1 diagram.

SUB CODE: 09/ SUBM DATE: 05Apr65

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UDC: 621.317.7

VASIL' KOVSKIY, D.N., GOROVITS, T.T., SHTEYN, V.K.

Methods of producing prints of thin wires by the use  
of polystyrene and quartz. Trudy SAGU no.148:23-28 '59.  
(MIRA 13:7)

(Electric wire--Testing)

3/001/60/000/021/002/015  
R005/R001

Translation from: Referativnyy zhurnal, Khimiya, 1960, No. 21, p. 29, # 65515

AUTHOR: Vasil'kovskiy, D. N.

TITLE: The Determination of Grain Orientation in Cubic System Crystals From Chemical Etching Patterns in Microscopical Investigations

PERIODICAL: Tr. Sredneaz. un-ta, 1959, No. 148, pp. 29-44

TEXT: The proposed method is based on the utilization of the spherical-polar coordinate system. In case of a facecentered cubic crystal lattice (when directions  $[100]$ ,  $[010]$ ,  $[001]$ , mutually orthogonal are the edges of the etching patterns), the method consists in the superposition of the intersection point of the axes  $\langle 100 \rangle$  with the center of the coordinate sphere in such a manner that the image plane of the microscope should coincide with the plane of the sphere ("equatorial") sphere circle and the intersection point of the first of the axes with the sphere surface should be the pole of reckoning the "longitudes". The specified choice of the coordinate system reduces the problem of determining crystallographic indices of the basic circle plane to the calculation of the

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3/081/60/001/001/001  
AC05/AC01

The Determination of Grain Orientation in Cubic System Crystals From Etching  
Etching Patterns in Microscopical Investigations

"latitudes" of the mutually orthogonal intersection points of the sphere with the axes  $\langle 100 \rangle$  from their known longitudes  $\lambda_1, \lambda_2, \lambda_3$ . The additional superposition of the "north pole" of the sphere with the point of its intersection with the primary axis and the application of the known formulae of spherical trigonometry leads to the required relation:  $\cos p_1 = \sqrt{\text{ctg}^2 \alpha_j \text{ctg}^2 \alpha_k}$ ;  $j, k = 1, 2, 3$ ; where  $\alpha_j = |\lambda_j - \lambda_k|$  are the angles between the projections of the etching pattern edges onto the microscope image plane and an arbitrary straight line in this plane (as an example, the thread axis in the investigation of thin wires), and  $p_1$  are the latitudes of the intersection points of the axes with the sphere. In particular, the crystallographic indices of the thread axis can be determined from the formulae:  $\cos l_1 = \sin p_1 \cos \lambda_1$ , where  $l_1$  are the angles between the thread axis and the crystallographical axes. The more intricate indication of crystals having a bodycentered cubic lattice is accomplished by the analogous method of the successive determination of the projections of the edges  $\langle 111 \rangle$  of the rhombododecahedral etching patterns and the projections of the axes  $\langle 100 \rangle$ . Nomographs are added for the actual computation by the theoretical formulae; the question of errors at their utilization is considered. A. Levin  
Translator's note: This is the full translation of the original Russian abstract.  
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24,7400 (1035, 1160, 1164, 1385)

21585  
S/109/60/005/010/008/031  
E240/E435

AUTHORS: Azizov, U.V., Vasil'kovskiy, D.N. and Sultanov, V.M.

TITLE: The Preparation and Indexing of Large Monocrystalline Tungsten Cathodes

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.10, pp 1631-1635

TEXT: This paper was presented at the 9th All-Union Conference on Cathode Electronics in Moscow, October 1959.

Methods are described for making large single crystals of tungsten from which can be made flat, spherical or cylindrical cathodes. Such cathodes are required for experimental work, as for example the measurement of work functions, heats of absorption and the study of surface diffusion. It was found that a fine-grained tungsten powder was necessary as a raw material, for best results. The following process enabled powders with an average grain size of one micron to be prepared; industrial grades have mean grain sizes of several microns. A quantity of tungstic anhydride is reduced in a nickel boat, which is drawn through a hydrogen tube furnace with a range of temperature increasing from 550 to 900°C. During

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E240/E435

The Preparation and Indexing ...

this process an unspecified amount of the anhydride is reduced to 50 g of tungsten. The tungsten powder is then pressed into rods, after sieving, which are then sintered for 5 hours at 800 to 900°C. Difficulties were experienced due to water vapour contamination of the furnace hydrogen supply, and an increase in temperature which occurred. It was found that the best crystals grew in the parts of the rods where the temperature gradient was greatest, i.e. at the ends. For this reason, the rods were shortened from 500 to 120 - 220 mm. Their cross-sections ranged between 11.4 x 6.8 mm and 11.4 x 10.2 mm. To obtain the largest crystals, it was found necessary to increase the sintering time, while maintaining a slow rise in temperature. Details are then given of the next stage of the process in the course of which currents up to 3600 A are passed through the rods for 2 hours followed by cooling for 5 minutes. The reader is referred to earlier work (Ref.1) for a more detailed description of the technique. It was found that about 10% of the rods contained single crystals 2 to 5 cm in length, which occupied the whole cross-section of the rod. In the majority of the remainder, smaller crystals were obtained, which were sometimes separated by fine-grained metal. No consistent

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The Preparation and Indexing ...

rules appeared to govern the orientations of the crystals within the rods. The crystals can be picked out by the naked eye, after the surface has been etched. Some mosaic structure appears on the surfaces of the crystals, accompanied by a change in crystallographic orientation; however, this is less evident if several microns of metal are first removed. The dimensions of the mosaic elements are of the order of three to seven microns. Pores were also discovered within the metal. The homogeneity of the crystal may be judged by means of the Schottky effect. The specimen is inspected before and after heat-treatment; however, the appearance of a wavy structure on the surface may cause complications. A discussion then follows on the relative stability of various facets of a crystal and reference is made to the work of I.N.Stranski and R.Suhrmann (Ref.3) who postulated the additivity of interatomic forces, and that they decreased rapidly with distance. The surface energy of a facet, being a function of the number of broken bonds, will increase with any deviation in its orientation. The following expression for the surface energy density may be obtained:

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The Preparation and Indexing ...

$$E = E_1 \left\{ \cos p - \frac{\sin p}{\sin S_1} [\operatorname{ctg} S_1 \sin (S_1 - \lambda) + \operatorname{ctg} S_3 \sin \lambda] \right\} + \\ + E_2 \frac{\sin p \sin (S_1 - \lambda)}{\sin S_1 \sin S_2} + E_3 \frac{\sin p \sin \lambda}{\sin S_1 \sin S_3} \quad (1)$$

where  $p$  and  $\lambda$  are the polar angle and width defining the macro-orientation of the facet under consideration. The specific surface energies of the stable facets closest to it, with coordinates  $(0, 0)$ ,  $(S_2, 0)$  and  $(S_3, S_1)$ , are correspondingly equal to  $E_1$ ,  $E_2$  and  $E_3$ . It is noted that the value of  $E_1$ , the interatomic force, does not affect the form of the equation. From this it is shown that it is theoretically possible for a stepped crystal structure to occur; but this is rarely found in practice. Further, it is argued that it is better to cut crystals to the desired form, rather than to rely on existing facet surfaces. A method for producing large single crystal tungsten cathodes by mechanical working is described by S.T.Martin (Ref.4: Phys.Rev., 1939, Vol.56, 947). However, the authors found that electro-spark cutting, followed by polishing and electro-polishing, gives

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E240/E435

The Preparation and Indexing ...

a far less laborious method of preparing cathodes. This method enabled a 1 cm diameter hemispherical cathode to be made for the Martin projector in a few hours, as opposed to the 4 - 5 weeks required for the mechanical machining method. A brief description is then given of various methods for determining the crystallographic orientation of a crystal. This can be done either by etching the crystal, which gives rise to clearly-visible marks bounded by the facet  $\{110\}$ . By measuring the angles between these marks, the spatial orientation can be defined (Ref.5). To find the  $\{110\}$  facet, a light-reflection method can be employed, while if the  $\{100\}$  facet is required, the cleavage of the crystal along this plane can be utilized. Such a fracture is readily distinguished from the conchoidal intercrystalline fracture. A suggested explanation of the fact that the crystal tends to break along the  $\{100\}$  plane, rather than the  $\{110\}$  plane, is then given. It would be expected, from energetic considerations, that cleavage would occur preferentially along the latter. It can be shown that one dislocation with a Burger's vector of a  $[100]$  is more stable than an equivalent pair of dislocations with vectors  $\frac{a}{2}[1\bar{1}1]$  and  $\frac{a}{2}[11\bar{1}]$ . If it is postulated that a cleavage

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E240/E435

The Preparation and Indexing ...

is the result of a series of similar linear dislocations, then  
from the above it is evident that the fracture will occur in the  
[100] plane, as it does. There are 4 figures and 5 references:  
2 Soviet and 3 non-Soviet. ✓

SUBMITTED: December 21, 1959

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S/181/62/004/001/015/052  
B125/B104

AUTHORS: Vasil'kovskiy, D. N., and Tadzhiyeva, E. M.

TITLE: The occurrence of a particular surface structure on wires  
annealed with direct current

PERIODICAL: Fizika tverdogo tela, v. 4, no. 1, 1962, 90 - 95

TEXT: According to Shmidt (G. N. Shuppe. Elektronnaya emissiya metallicheskih kristallov - Electron emission of metal crystals - Izd. SAGU, Tashkent, 1959), there exists a relationship between the surface structure formed by vacuum annealing of drawn tungsten wires for 20 to 30 min at 2000°K and the orientation of the original structure. The axis of the wire is a second-order axis of symmetry of the new structure. The size of the steps formed on the surface during annealing is dependent on the temperature of their formation. To investigate these phenomena more closely, pieces of tungsten wire of the type PA-3 (VA-3) with an initial diameter of 170μ were electrically polished, and annealed at 2000 - 2600°K for 10 - 300 hrs. Microscopic examination (magnification, 500 - 2000 times) of the surface of several dozen wires with the aid of a goniometric

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